CLAIMS

1. A deficiency inspection method based on a magnetic-particle inspection scheme, wherein a to-be-inspected surface of a specimen is picked up using a color video camera and a deficiency on said to-be-inspected surface is inspected using an image acquired by that image pickup.

2. The deficiency inspection method according to claim 1, wherein a deficiency on said to-be-inspected surface of a specimen is picked up using a color video camera and a deficiency on said to-be-inspected surface is inspected using a green (G) signal component in signals of primary colors of RGB in said image picked up by said color video camera.

3. A deficiency inspection method based on a magnetic-particle inspection scheme, wherein a to-be-inspected surface of a specimen to which a solution containing fluorescent magnetic powder is applied is irradiated with ultraviolet rays, said to-be-inspected surface irradiated with ultraviolet rays is picked up by a color video camera, and an image acquired by that image pickup is displayed on a screen in a nearly same state as an image acquired by visually observing said to-be-inspected surface irradiated with ultraviolet rays.

4. A deficiency inspection method based on a

magnetic-particle inspection scheme, wherein a to-be-inspected surface of a specimen to which a solution containing fluorescent magnetic powder is applied is irradiated with ultraviolet rays, said to-be-inspected surface irradiated with ultraviolet rays is picked up by a color video camera via an ultraviolet-rays cutting filter, a deficiency and deficiency candidates are extracted from an image acquired by that image pickup, and images of said extracted deficiency and deficiency candidates are displayed on a screen.

5. A deficiency inspection method based on a penetrant inspection scheme, wherein a to-be-inspected surface of a specimen is picked up using a color video camera and a deficiency on said to-be-inspected surface is inspected using an image acquired by that image pickup.

6. A deficiency inspection method based on a penetrant inspection scheme, wherein a to-be-inspected surface of a specimen is illuminated with polarization light, said to-be-inspected surface illuminated with polarization light is picked up by a color video camera via a polarization filter, a deficiency and deficiency candidates are extracted from an image acquired by that image pickup, and images of said extracted deficiency candidates are displayed.

7. A deficiency inspection method based on a probing

scheme, wherein a to-be-inspected surface of a specimen is picked up by a color video camera with positional information of a visual field of said color video camera placed in said visual field, deficiency candidates in said to-be-inspected surface are extracted from an image acquired by that image pickup, and images of said extracted deficiency candidates are displayed on a screen together with said positional information of said visual field.

8. The deficiency inspection method according to claim 7, wherein said positional information of said visual field is originated from a scale arranged in said visual field.

9. The deficiency inspection method according to any one of claims 1 to 8, wherein said to-be-inspected surface is picked up by said color video camera over plural visual fields.

10. A deficiency inspection method based on a probing scheme, wherein a to-be-inspected surface of a specimen is picked up by image pickup means, deficiency candidates in said to-be-inspected surface are extracted from an image acquired by that image pickup, images of said extracted deficiency candidates are displayed on a screen, and a pseudo deficiency is eliminated from said displayed images of said deficiency candidates.

11. A deficiency inspection method based on a probing

scheme, wherein a to-be-inspected surface of a specimen is picked up by image pickup means, deficiency candidates in said to-be-inspected surface are extracted from an image acquired by that image pickup, images of said extracted deficiency candidates are displayed on a screen, and information about a deficiency selected from said images of said displayed deficiency candidates is stored.

12. A deficiency inspection apparatus based on a probing scheme, comprising: illumination means for illuminating a to-be-inspected surface of a specimen; image pickup means for picking up said to-be-inspected surface by a color video camera; deficiency-candidate extraction means for extracting deficiency candidates on said to-be-inspected surface from an image of said to-be-inspected surface acquired by image pickup by said image pickup means; and display means for displaying images of said deficiency candidates extracted by said deficiency-candidate extraction means.

13. The deficiency inspection apparatus according to claim 12, wherein said illumination means has an ultraviolet-rays illuminating section for illuminating ultraviolet rays onto said to-be-inspected surface of said specimen, and a white-light illuminating section for illuminating white light onto said to-be-inspected surface of said specimen.

14. A deficiency inspection apparatus based on a probing scheme, comprising: illumination means for illuminating a to-be-inspected surface of a specimen; image pickup means for picking up said to-be-inspected surface by a color video camera; magnetic-particle-inspection-originated deficiency-candidate extraction means for extracting magnetic-particle-inspection originated deficiency candidates on said to-be-inspected surface from an image of said to-be-inspected surface acquired by that image pickup by said image pickup means; penetrant-inspection-originated deficiency-candidate extraction means for extracting penetrant-inspection-originated deficiency candidates on said to-be-inspected surface from said image of said to-be-inspected surface acquired by image pickup by said image pickup means; and display means for displaying images of said deficiency candidates extracted by said magnetic-particle-inspection-originated deficiency-candidate extraction means or said penetrant-inspection-originated deficiency-candidate extraction means.

15. A deficiency inspection apparatus based on a probing scheme, comprising: illumination means for illuminating a to-be-inspected surface of a specimen; image pickup means for picking up said to-be-inspected surface by a color video camera; deficiency-candidate extraction means for extracting deficiency candidates on said to-be-

inspected surface from an image of said to-be-inspected surface acquired by image pickup by said image pickup means; a storage section for storing images of said deficiency candidates extracted by said deficiency-candidate extraction means; and display means for displaying information of said images of said deficiency candidates stored in said storage section on a screen.

16. A deficiency inspection apparatus based on a probing scheme, comprising: ultraviolet-rays irradiation means for irradiating ultraviolet rays to a to-be-inspected surface of a specimen to which a solution containing fluorescent magnetic powder is applied; image pickup means for picking up said to-be-inspected surface irradiated with ultraviolet rays by said ultraviolet-rays irradiation means by a color video camera; and display means for displaying an image of said to-be-inspected surface acquired by image pickup by said image pickup means on a screen in a nearly same state as an image acquired by visually observing said to-be-inspected surface irradiated with ultraviolet rays.

17. A deficiency inspection apparatus based on a probing scheme, comprising: ultraviolet-rays irradiation means for irradiating ultraviolet rays to a to-be-inspected surface of a specimen to which a solution containing fluorescent magnetic powder is applied; image pickup means for picking up said to-be-inspected surface irradiated with

ultraviolet rays by said ultraviolet-rays irradiation means by a color video camera via an ultraviolet-rays cutting filter; deficiency-candidate extraction means for detecting deficiency candidates on said to-be-inspected surface from an image of said to-be-inspected surface acquired by image pickup by said image pickup means, and display means for displaying images of said deficiency candidates extracted by said deficiency-candidate extraction means.

18. A deficiency inspection apparatus based on a probing scheme, comprising: ultraviolet-rays irradiation means for irradiating ultraviolet rays to a to-be-inspected surface of a specimen to which a solution containing fluorescent magnetic powder is applied; image pickup means for picking up a fluorescent image of said to-be-inspected surface irradiated with ultraviolet rays by said ultraviolet-rays irradiation means by a color video camera; deficiency-candidate extraction means for extracting deficiency candidates on said to-be-inspected surface using a green (G) signal component in a color image signal output from said image pickup means; and display means for displaying images of said deficiency candidates extracted by said deficiency-candidate extraction means.

19. A deficiency inspection apparatus based on a probing scheme, comprising: illumination means for illuminating a to-be-inspected surface of a specimen to

which a penetrant is temporarily applied with white light; image pickup means for picking up said to-be-inspected surface by a color video camera; magnetic-particle-inspection-originated deficiency-candidate extraction means for extracting magnetic-particle-inspection originated deficiency candidates on said to-be-inspected surface from an image of said to-be-inspected surface acquired by that image pickup by said image pickup means; penetrant-inspection-originated deficiency-candidate extraction means for extracting penetrant-inspection-originated deficiency candidates on said to-be-inspected surface from said image of said to-be-inspected surface acquired by image pickup by said image pickup means; and display means for displaying images of said deficiency candidates extracted by said magnetic-particle-inspection-originated deficiency-candidate extraction means or said penetrant-inspection-originated deficiency-candidate extraction means.

20. The deficiency inspection apparatus according to any one of claims 12 to 19, wherein positional information display means for displaying positional information of a visual field of said color video camera is arranged in said visual field.

21. The deficiency inspection apparatus according to claim 20, wherein said positional information display means is a scale.